

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	Robert L. Koelzer
Application No. 10/663,397	Filing Date: September 16, 2003
Title of Application:	System For Regulating The Supply Of Power To A Brake System
Confirmation No. 2908	Art Unit: 3683

Mail Stop Appeal Brief - Patents
Commissioner for Patents
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Appeal Brief Under 37 CFR §41.37

Dear Sir:

A Notice of Appeal from the final rejection of claims 69-74, 76-86, and 91 of U.S. Patent Application No. 10/663,397 was previously submitted. Appellant accordingly files its appeal brief in connection with its appeal. A Claims Appendix is submitted herewith, as are Appendices related to evidence previously submitted and related proceedings to the case.

(i) Real Party In Interest

The real party in interest is Haldex Brake Corporation, assignee of the patent application.

(ii) Related Appeals and Interferences

There are no related Appeals or Interferences.

(iii) Status Of Claims

Claims 69-74, 76-86, and 91 stand rejected and are the subject of the instant Appeal. A copy of each of these claims is attached hereto in the Claims Appendix.

(iv) Status Of Amendments

There are no pending or unentered Amendments.

(v) Summary Of Claimed Subject Matter

The present invention as claimed in independent Claim 69 relates to a system for regulating the supply of power to a vehicle's brake system, as shown in Figures 2 & 6 and described on Page 5, line 2 – Page 6, line 3 and Page 6, line 24 – Page 7, line 21 of the specification. As illustrated in Figure 2 and described at Page 5, line 2 – Page 6,

line 3, the system includes an engine (22), a supply device (40) driven by the engine (22), and a motor (42). The supply device (40) supplies an agency (arrows A) to drive the motor (42). As a result, the motor (42) drives a brake power source (26), which powers a brake system (28). An electronic control unit (30) communicates with the supply device (40) to control that rate at which the agency (arrows A) is supplied to the motor (42). As shown in Figure 6 and described at Page 5, lines 15-21 and Page 6, line 24 – Page 7, line 21, the electronic control unit (30) has at least one input (96) for receiving signals reflecting air pressure, and the electronic control unit (30) determines the rate at which to cause the supply device (40) to supply the agency to the motor (42) based at least in part on this received information.

The present invention as claimed in independent Claim 91 relates to a system for regulating the supply of power to a vehicle's brake system, as shown in Figures 2 & 6 and described on Page 5, line 2 – Page 6, line 3 and Page 6, line 24 – Page 7, line 21 of the specification. As illustrated in Figure 2 and described at Page 5, line 2 – Page 6, line 3, the system includes an engine (22), a supply device (40) driven by the engine (22), and a motor (42). The supply device (40) supplies an agency (arrows A) to drive the motor (42). As a result, the motor (42) drives a brake power source (26), which powers a brake system (28). An electronic control unit (30) communicates with the supply device (40) to control that rate at which the agency (arrows A) is supplied to the motor (42). As shown in Figure 6 and described at Page 5, lines 15-21 and Page 6, line 24 – Page 7, line 21, the electronic control unit (30) has at least one input (96) for

receiving signals reflecting the temperature in an air dryer, and the electronic control unit (30) determines the rate at which to cause the supply device (40) to supply the agency to the motor (42) based at least in part on this received information.

(vi) Grounds of Rejection To Be Reviewed On Appeal

Claims 69-73, 76-79, and 91 stand rejected under 35 U.S.C. §103 as obvious over Bosch, DE 35 29 743, at the time of the invention in view of Bruehmann et al., U.S. Patent No. 6,089,831.

Claims 74 and 82-86 stand rejected under 35 U.S.C. §103 as obvious over Bosch, DE 35 29 743, at the time of the invention in view of Bruehmann et al., U.S. Patent No. 6,089,831, and further in view of Eslinger, U.S. Patent No. 5,613,744.

Claims 80-81 stand rejected under 35 U.S.C. §103 as obvious over Bosch, DE 35 29 743, at the time of the invention in view of Bruehmann et al., U.S. Patent No. 6,089,831, and further in view of Koelzer, U.S. Patent No. 6,439,857.

(vii) Argument

Independent Claim 69

After reciting the different portions (i.e., supply device, motor) that make up the intermediate supply device that separates the engine from the brake power source (e.g., compressor), Claim 69 goes on to recite:

an electronic control unit in communication with said supply device that controls that rate at which the agency is supplied by said supply device;

wherein said electronic control unit has at least one input for receiving signals containing information reflecting air pressure; and

wherein said electronic control unit determines the rate at which to cause said supply device to supply the agency to said motor based at least in part on the received information, thereby causing said motor to drive said brake power source at a desired rate.

The cited art does not disclose or suggest a system configured to operate in this way.

The Examiner has cited Bosch, noting that it “discloses a system which regulates an intermediate device to ensure adequate compressor function.” 6/4/07 Final O.A. at 5. The Examiner has combined this with Bruehmann, noting that “the control or cycling of the compressor such as taught by Bruehmann to maintain proper air pressure and temperature appear to be perfectly applicable to the brake system.” *Id.* This combination falls far short of the elements claimed above. As further explained below, neither of these references, either alone or in combination, suggest using an electronic control unit to receive information reflecting air pressure and using this information to

control the rate at which a supply device supplies an agency to a brake power source motor.

Bosch

Bosch simply discloses a supply device that supplies an agency to a motor (27) that drives a brake compressor (28). See Fig. 1. It is missing several key aspects of the claimed device.

First, Bosch does not disclose controlling a *supply device* for the motor of a brake power source with an electronic control unit. For example, in the embodiment illustrated in Figure 1, the electronic control unit (53), which receives limited information from the sensors 51, 54 (along lines 52, 55), actually controls the motors 24, 27, 38, and 48 via their respective proportional valves (along lines 56, 58, 60, 63). In other words, the ECU (53) controls the device motors (including motor 27 for brake power source 28). It does not control the pumps (11, 12) that supply those motors.

Appellant respectfully notes that the Examiner has switched between the illustrations of different embodiments of this foreign reference and simply identified isolated portions of them without providing an adequate explanation of how these portions allegedly satisfy the claim language. See 6/4/07 Final O.A. at 2 (referencing the description of Fig. 3 and items depicted in Fig. 4) and at 5 (referencing the pump 95 of Fig. 4). Like Figure 1, these other embodiments do not disclose controlling a *supply device* for a brake power source motor with an electronic control unit. In the embodiment shown in Figure 3, it does appear that the ECU (53) controls the pump (82)

via the adjusting device (84) (along line 89). However, pump (84) pumps to a motor (86) for a charge air compressor (25). The embodiment in Figure 3 does not use the ECU (53) to control the rate at which a pump pumps fluid to the motor of a brake power source. Similarly, though the Examiner has referenced the “pump 95” in Figure 4, as shown in that Figure and described at the bottom of Col. 5, the ECU (53) does *not* control the pump (95).

Nowhere does Bosch disclose an ECU that controls the rate at which the supply device supplies an agency to a motor that drives a brake power source. Based on the Examiner’s comments at pages 5-6 of the Final Office Action at 6/4/07, it is unclear whether the Examiner is maintaining the position that Bosch does disclose this or is now asserting that it is simply obvious in light of Bruehmann. Regardless, for the reasons set forth above, Bosch does *not* disclose this, and for the reasons set forth below, this is *not* an obvious modification in light of Bruehmann.

Second, Bosch does not disclose using air pressure to control the rate of the supply device for a brake power source motor. The Examiner does not dispute this.

6/4/07 Final O.A. at 2.

Bruehmann

Though the Examiner has cited Bruehmann in combination with Bosch, this additional reference falls short of making up the deficiencies of Bosch. While Bruehmann may, as the Examiner notes, teach the desirability of maintaining adequate air pressure, this does not in any way suggest employing an ECU to receive information

reflecting air pressure and control the rate at which a supply device supplies an agency to the motor of a brake power source based on that information.

As noted above, Bosch does not even disclose using an ECU generally to control the rate at which a supply device supplies an agency to brake power source motor (much less an ECU that does this based on received information reflecting air pressure). Bruehmann itself does not fill this void, as it would certainly not suggest to one skilled in the art to use an ECU to control the workings of an intermediary supply-device-and-motor assembly in this way.

In fact, Bruehmann actually teaches away from doing so. Specifically, Bruehmann teaches to compress the air at full speed, and to deal with any difference between the power supplied by the engine and the desired amount of air compression by either diverting the unneeded air to a relief point or switching off (or uncoupling) the coupling. See Col. 3, Ins. 20-30. By specifically teaching to allow the engine to compress air at full capacity, and then simply vent the unneeded air or disengage the connection, Bruehmann teaches away from employing an intermediary control system that isolates the power supply to the compressor from the engine (so as to regulate the power to the compressor independently of the engine speed), as presently claimed.

The Examiner states that this does not constitute a “teaching away” because “the control of the mechanical coupling/uncoupling taught by Bruehmann is a functional [sic] related to the hydrostatic coupling/uncoupling and control utilized by DE 3451446”.

6/4/07 Final O.A. at 6-7. Appellant respectfully submits that this statement is unfair. These are two fundamentally different types of mechanisms that function in opposite manners—the present invention controls the operation of the compressor by regulating the motor that drives the compressor by controlling the rate at which an agency is supplied to that motor. Bruehmann teaches to *not* control the operation of the compressor, but rather, teaches to vent the unneeded air or uncouple the compressor from the drive.

The present invention's ability to control the rate at which an agency is supplied to the motor allows for a gradual, continuous *regulation* of the compressor motor, which requires less work by the system and results in a smoother operation. Bruehmann is a completely dissimilar type of system that functions in a fundamentally different way. Appellant submits that it is improper to look to prior art that teaches one to use a type of system fundamentally different from the present invention to selectively cite a particular teaching, and then ignore the rest of the reference, which otherwise teaches one to use a system that vents fluid instead of regulating the fluid supply. *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 U.S.P.Q. 303 (Fed. Cir. 1983) (cited references must be considered as a whole, including portions that teach away from the claimed invention).

While Bruehmann may indeed teach the obvious desirability of maintaining adequate air pressure, neither Bosch nor Bruehmann teaches the desirability of using an ECU to receive information reflecting the demands of the vehicle (i.e., the

brake system) to control an intermediary assembly controlling the power supplied to the brake power source independent of the engine speed. Therefore, neither reference would suggest that an ECU should be used to receive a signal containing information reflecting air pressure and, based on that information, determine the rate at which a supply device supplies an agency to a motor driving the brake power source.

Dependent Claims 70-74, 76-86

Dependent claims 70-74 and 76-86 depend on claim 69. Therefore, these claims include all of the limitations of claim 69. Accordingly, for the reasons argued with respect to claim 69, these claims are also patentable over the cited references.

Independent Claim 91

Independent claim 91 recites all of the limitations of claim 69, except that claim 91 recites an electronic control unit that receives information reflecting *the temperature in an air dryer* and uses that information to control the rate at which the supply device supplies the agency.

As explained above with respect to claim 69, neither Bosch not Bruehmann teaches using an ECU to control a supply device that supplies an agency to a motor that controls the brake power source. In fact, Bruehmann even teaches away from

using such an intermediate mechanism, but regardless, neither reference teaches controlling it in the way presently claimed (i.e., using an ECU to control the rate at which a supply device supplies an agency to the brake power source motor). Finally, even if it did, neither reference discloses using information reflecting the temperature in an air dryer to do so. Regardless of whether Bruehmann discloses the importance of maintaining proper temperature, it does not teach inputting this information into an ECU so that the ECU can use this information to control a supply device. For these reasons, claim 91 is likewise patentable over the cited art.

Conclusion

For all of the foregoing reasons, it is submitted that the claimed invention is patentable over the cited art. Accordingly, it is submitted that the prior art rejections of claims 69-74, 76-86, and 91 should be reversed, and it is respectfully requested that the Examiner be directed to issue a Notice of Allowance allowing these claims.

Respectfully submitted,

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**Claims Appendix
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69. A system for regulating the supply of power to a vehicle's brake system, comprising:

an engine;

a supply device driven by said engine for supplying an agency;

a motor driven by the agency supplied by said supply device;

a brake power source driven by said motor;

a brake system powered by said brake power source; and

an electronic control unit in communication with said supply device that controls that rate at which the agency is supplied by said supply device;

wherein said electronic control unit has at least one input for receiving signals containing information reflecting air pressure; and

wherein said electronic control unit determines the rate at which to cause said supply device to supply the agency to said motor based at least in part on the received information, thereby causing said motor to drive said brake power source at a desired rate.

70. The system as claimed in claim 69, wherein:

said supply device comprises a hydraulic pump for supplying fluid; and

said motor comprises a hydraulic motor driven by the fluid.

71. The system as claimed in claim 70, further comprising a reservoir for receiving fluid from said motor and from which said pump receives the fluid.

72. The system as claimed in claim 69, wherein said electronic control unit further includes an input for receiving information reflecting the revolutions per minute of said engine's crankshaft.

73. The system as claimed in claim 69, wherein said electronic control unit further includes an input for receiving information reflecting throttle position.

74. The system as claimed in claim 69, wherein said electronic control unit further includes an input for receiving information reflecting the rate of rotation of at least one of the wheels.

76. The system as claimed in claim 69, wherein said electronic control unit further includes an input for receiving information reflecting temperature in an air dryer.

77. The system as claimed in claim 69, wherein said electronic control unit further includes an input for receiving information reflecting the speed of said motor.

78. The system as claimed in claim 69, wherein said brake power source is a source of pressurized fluid.

79. The system as claimed in claim 78, wherein said source of pressurized fluid is an air compressor.

80. The system as claimed in claim 79, wherein said air compressor is a swash plate compressor.

81. The system as claimed in claim 80, wherein said compressor comprises:

- a cylinder block having at least one piston channel therein;
- a swash plate housing mounted adjacent to said cylinder block;
- a shaft disposed in said swash plate housing and cylinder block;
- a swash plate mounted on said shaft;
- at least one piston coupled to said swash plate and disposed in said at least one piston channel and slidable therein; and
- an actuator contacting said swash plate, such that said actuator, in a first position, exerts a force on said swash plate appropriate to retain said swash plate in a position perpendicular to said drive shaft, such that said at least one piston remains idle, and, in a second position, exerts a force on said swash plate appropriate to pivot said swash plate, thereby causing reciprocal motion of said at least one piston when said actuator rotates.

82. The system as claimed in claim 78, wherein said brake system comprises:

- a reservoir for receiving the pressurized fluid from said source of pressurized fluid;

a braking mechanism;
a valve connecting said reservoir to said braking mechanism; and
a valve actuator connected to said valve for governing the flow of the pressurized fluid from said reservoir to said braking mechanism.

83. The system as claimed in claim 82, wherein the vehicle includes a rotating surface and said braking mechanism comprises:

a contact device for contacting the rotating surface and thereby creating friction;
and
a contact device actuator for causing said contact device to contact the rotating surface.

84. The system as claimed in claim 83, wherein said contact device comprises a brake shoe.

85. The system as claimed in claim 83, wherein said contact device actuator comprises a piston.

86. The system as claimed in claim 83, wherein said contact device actuator comprises a spring.

91. A system for regulating the supply of power to a vehicle's brake system, comprising:

an engine;

a supply device driven by said engine for supplying an agency;

a motor driven by the agency supplied by said supply device;

a brake power source driven by said motor;

a brake system powered by said brake power source; and

a controller in communication with said supply device that controls that rate at which the agency is supplied by said supply device;

wherein said controller has at least one input for receiving signals containing information reflecting the temperature in an air dryer; and

wherein said controller determines the rate at which to cause said supply device to supply the agency to said motor based at least in part on the received information, thereby causing said motor to drive said brake power source at a desired rate.

**Evidence Appendix
to Appeal Brief Under 37 CFR §41.37
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No evidence of any kind, including evidence submitted under 37 CFR 1.130, 1.131 or 1.132, has been entered by the Examiner and relied upon by Appellant in the appeal.

**Related Proceedings Appendix
to Appeal Brief Under 37 CFR §41.37
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There are no related Appeals or Interferences. As such, there are no decisions rendered by a court or the Board in any such Appeals or Interferences.